POLYURETHANE NANOFIBERS COATINGS ON THE X-RAY FILM BY USING ELECTROSPINNING TECHNIQUES

NURUL NADIRAH BINTI SUTERIS

UNIVERSITI MALAYSIA PAHANG

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NURUL NADIRAH BINTI SUTERIS

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SUPERVISORS' DECLARATION

I hereby declare that I have checked the thesis and in my opinion, this thesis is adequate in terms of scope and quality for the award of the degree of Bachelor of Applied Science (Honor)Material Technology.

Signature

Name of Supervisor	:	PROF JOSE RAJAN
Position	:	SENIOR LECTURER
Date	:	26 December 2016

STUDENT'S DECLARATION

I hereby declare that the work in this thesis is my own except for quotations and summaries which have been duly acknowledged. The thesis has not been accepted for any degree and is not concurrently submitted for award of other degree.

Signature	:	
Name	:	NURUL NADIRAH BINTI SUTERIS
ID Number	:	SC13044
Date	:	26 December 2016

DEDICATION

I dedicated this work to my respected supervisor, Prof Jose Rajan, my family and friends. A special feeling of gratitude towards both of my parents, Suteris Bin Masron and Nirwati Binti Hussin who always sbeen supporting me and thanks to all my siblings, Nurul Najwa Bint Suteris (sister), Muhamad Syazwan Bin Suteris (brother), Nurul Nadana Binti Suteris (sister), Muhammad Syarafuddin Bin Suteris (brother), Muhammad Syahmi Bin Suteris (brother) and Khairunnisa Madihah Binti Suteris (sister), that keep on giving words of encouragement to me.

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~	-	approximately
%	-	percent
λ	-	wavelength
η	-	coulombic efficiency
^{o}C	-	degree celcius
g	-	grams
µ	-	kinematic viscosity
h	-	jet radius (m)
Z	-	distance from the nozzle to the collector
ρ	-	density (kg/m^3)
Q	-	flow rate (m^3/s)
E_{∞}	-	external electric field (V/m)
I	-	electric current (A)
γ	-	surface tension of the fluid (N/m)
ε	-	dielectric permittivity (F/m)
x	-	dimensionless whipping instability
R	-	electrical resistance of the jet (Ω)
U	-	applied voltage (V)
rs	-	resistivity of the solution (Ω m)
S	-	section of the jet (m^2)

LIST OF ABBREVIATIONS

SEM	-	Scanning Electron Microscope
ATR-FTIR	-	Attenuated Total Reflection-Fourier Transform Infrared
PU	-	Polyurethane
DMF	-	N,N-dimethylformamide